Office Action Summary	Application No.	Applicant(s)	
	10/674,451	INAO, TAKESHI	
	Examiner	Art Unit	
	Maurina Rachuba	3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15,16,18 and 20-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,16,18 and 20-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 September 2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 15, 16, 18, and 20-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommer, 4,955,163 in view of Nagata, 5,343,626 and Pflager et al, 5,443,413. '163 discloses an apparatus for polishing side faces of grooves formed on a workpiece comprising: a fixture, figures 12, 14 and 15, for fixing the workpiece; a rotating shaft disposed in a horizontal direction of the fixture; a rotary driving unit for rotating the rotating shaft; a disc polishing element having abrasive grains thereon for polishing the side faces of the grooves, figure 10, the polishing element being fixed to the rotating shaft; wherein the disk polishing element has the abrasive grains on a side face thereof for polishing the workpiece, figure 10, and the disk polishing element further comprises abrasive grains at a peripheral edge thereof for cutting the workpiece,

figure 10; a driving unit, figure 14, for moving at least one of the rotating shaft and the workpiece in the vertical direction, horizontally in the longitudinal direction of the rotating shaft, and in the longitudinal direction of the grooves along the side faces of the grooves, so that the polishing element reciprocates and rotates; and a detector, column 12, lines 30 through column 14, lines 33, for detecting the position where the polishing element is in contact with the workpiece. Note that by detecting the position of the carriages, the position where the polishing element is in contact with the workpiece is detected. '163 does not disclose moving the rotating shaft and/or workpiece horizontally in the longitudinal direction of the grooves. In order for the shaft and/or workpiece to be moved horizontally in the longitudinal direction of the grooves, the workpiece of '163 must be placed so that its longitudinal axis is horizontal, so that the grooves have a horizontal component. '626, in a similar device, figure 2, teaches that it is old and well known to mount a grooved workpiece such that the grooves have a horizontal longitudinal direction along the side faces of the grooves. It would have been obvious to one of ordinary skill in the art to have provided '163 with the workpiece placement taught by '626, figure 2, with the workpiece oriented so that the grooves have a longitudinal, horizontal component, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. '163 does not disclose that the detector for detecting the position where the grinding element is in contact with the work piece is a sensor detecting at least one of a magnetic filed and a current of the rotary driving unit. In a grinding apparatus, '413 teaches that Hall effect sensors (measuring magnetic field) are old and well known for measuring the position of

one element relative to another, column 3, lines 9-11. It would have been obvious to one of ordinary skill in the art to have provided '163 with a Hall sensor as the sensor to measure the position of the polishing element relative to the workpiece, as taught by '413, column 3 lines 9-11, as one of many known position sensors available to applicant at the time the invention was made, to allow accurate sensing of the position of the tool. Further, '163 does not disclose the cutting depth of the abrasive grains. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided '163 with grains having a size in the claimed range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Here, the size of the grain can be dependent on the properties of the material being processed, the desired processing time, and the desired surface finish.

Response to Arguments

4. Applicant's arguments filed 21 September 2007 have been fully considered but they are not persuasive. Applicant argues that the amended claims provide that the polishing element can be brought into contact with the workpiece uniformly even if the longitudinal dimension of the side face of the grooves is longer than the width of the element. However, it is the examiner's position that as Sommer discloses a driving unit, figure 14, for moving at least one of the rotating shaft and the workpiece in the vertical direction, horizontally in the longitudinal direction of the rotating shaft, and in the longitudinal direction of the grooves along the side faces of the grooves, so that the

polishing element reciprocates and rotates, which would result in the polishing element being brought into uniform contact with the workpiece.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maurina Rachuba whose telephone number is 571 272 4493. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571 272 4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. Rachuba/
Primary Examiner, Art Unit 3723